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RAILROAD VALUATION AS A WORKING TOOL

I. THE CONDITIONS OF THE PROBLEM

INTRODUCTION

In our governmental system the people or their legislative representatives are supposed to be the ultimate power in broad and fundamental matters of policy, while the expert is supposed to furnish information on matters of fact, to devise and propose ways and means, and in general to work out secondary questions of detail. Valuation, in this scheme of things, seems to fall within the sphere of the expert, and the determination of general policy appears to deal merely with deciding to have a valuation made, and what use to make of it after it comes from the desks of the experts who have framed it. And yet valuation is not a mere reporting of objective facts; "fair value for purposes of regulation" is a matter of judgment in devising an instrument suited to the carrying out of a policy of control. Fairness in this case means fairness in view of the policy of control that is to be followed, and fair value cannot be determined without knowing just how it is to be used in several important particulars, any more than a fair wage could be determined without knowing whether it is to be a maximum, an average, or a minimum, what insurance or pension

benefits it carries with it, and what the comparative cost of living is in the different localities where it is to be put into effect.

It is a commonplace that the proper standard of valuation depends on the purpose for which it is made, but this idea does not seem to be applied further than the general fact that value for taxation is one thing and value for regulation is another, while it seems commonly to be taken for granted that the capitalization of public utilities should not exceed the value for regulation, so far as the *fait accompli* of overcapitalization permits this standard to be enforced. "Value for regulation" seems to be thought of as one thing. What does not seem to be sufficiently realized is that there are different kinds of regulation which might require different kinds of valuations in order to work justice.

The practical consequence is that it is out of order to make a valuation first and decide afterward upon a policy of regulation which is to "apply" it. In requiring the Interstate Commerce Commission to do this, Congress demanded the impossible. Thus it may be set down as one of the incidental benefits of the world-war that we have been somewhat tardily forced into a correct order of procedure; for Congress has passed a comprehensive bill to control the railroads, while the national valuation of their properties is still incomplete. Thus the Interstate Commerce Commission can finish its work of valuation, knowing how the results are to be used in controlling the roads. If it had been possible in 1913 to inform the commission just how its valuation was to be used, the task of the commission would have been vastly clarified, and it might have been possible to avoid some waste motion and expense in the making of the valuations themselves.

For example, it will probably be found that cost of reproduction is, in the case of railroads, irrelevant to the needs of a proper policy of control; but the decision whether it is or is not may depend on certain other features of the plan of control adopted. Considerations of justice and expediency both may set somewhat narrow limits of possible choice in valuing existing capital invested under past conditions, but there is hardly any limit save expediency to what may be done for the future, if only the terms on which capital is invested are definitely enough known in advance.

It will not be easy to get the public to realize the extent of their power in this respect. The average man knows that regulation of the rates of railroads and public utilities hinges on a valuation of the properties, and he knows that valuation is a complex undertaking on which engineers, expert accountants, and economists disagree. If he has read a little on the subject he knows that it involves difficult and abstruse questions of original cost, cost of reproduction under various hypothetical conditions, depreciation under various methods of calculation, unearned increments on land values, deficits incurred in developmental periods, allowances for abandoned property, surplus accumulated out of past earnings, "going value," and many other matters. It is small wonder that he feels that such things are best left to the experts, and that the determination of policy, in which he is undoubtedly interested, begins where the work of the experts leaves off. This attitude has already cost the country heavily in money and uncertainty. The war presented the country with a wonderful opportunity to strike out a new policy, cutting loose if necessary from past precedents and even from past decisions of the courts, establishing an unhampered understanding with the railroad companies as to the future terms of regulation.

RICH AND POOR ROADS

The conditions of the railroad business are by this time sufficiently well known and emphasized by experience in those matters that affect the fundamentals of regulation. The chief considerations can be stated in brief compass and easily comprehended. In the first place, railroads may be described as semi-competitive industries. They have power to fix their own rates by joint action, and against this power the public needs protection, but single companies cannot fix charges independently of the charges of other companies. Where there is direct competition, rates must be the same, save for occasional limited differentials in which the line that offers the least attractive service is allowed to make up for it by lower rates. This operates generally to give the lower rates to the line that is poorer financially—"to him that hath shall be given," here as elsewhere. Even where there is no direct

competition, roads must make rates that will keep their producers in business in competition with producers on other roads. Those roads that cannot earn as much as the other roads do are the "weak roads." They should, of course, not be confused with roads whose earnings are adequate but whose capitalization is so swollen that they make a poor financial showing. These latter present a problem of capitalization, not of rate-making. In practice, until reliable figures of investment can be had, it is not easy to tell which is which. The really weak roads are commonly those whose territory does not furnish the heaviest trainloads, and they cannot get out of the difficulty simply by raising rates, because that would cramp the industrial growth of their section and ultimately make matters worse or at least prevent them from getting better. This is one strong objection to those proposals that look toward deliberately making rates in such a way as to bring the strong and weak roads as nearly as possible to the same level of prosperity. In general, the local patrons of weak roads are already paying more than others for what they get, and such a plan would make their condition worse.

Thus we have a problem quite like the problem of the "marginal producer" in competitive industry, who has figured so largely in price-fixing policies during the war. Under the principle that prices must be high enough to insure an adequate supply, the government in fixing railroad rates must keep the poorer roads in operation unless it decides that they are not needed. But here appears a second peculiarity of the railroad business that marks it off as different from the competitive industries in which our war-time experiments in price-fixing were tried. In competitive manufacturing or trading the disadvantage of the least efficient may be their misfortune or their fault, but in any case it gives them no claim to have prices made to suit their needs and the consumers taxed to pay large profits to the more fortunate producers on the pretext of keeping the marginal producer alive. Such a policy may be followed in an emergency such as the war, when it may be better to use comparatively inefficient plants rather than to take the time and undergo the expense of enlarging the more efficient establishments. But as a long-run policy such producers

are hardly necessary and might properly be assisted to improve their performance or, failing that, to retire from business. Under active competition exactly this alternative would face them. It is said that wage awards have sometimes hastened this process, perhaps under the influence of the plea that if small producers cannot afford to pay a living wage, their poverty should be no protection in case the business can readily be done by larger and more efficient establishments which can afford fair wages.

But however this may be in manufacturing or competitive trade, the case of the inefficient railroad is not so simple. Its disadvantage may be nobody's fault and no accident, but a plain case of economic "manifest destiny," virtually permanent and unavoidable. And the efficient plant cannot handle the inefficient plant's business for it. The Pennsylvania Railroad might consolidate with the Pere Marquette, but it can never move Pere Marquette local freight on Pennsylvania main-line tracks. And, finally, the service of a region's only railroad is so important that it might pay the region or the nation to keep it running even at a loss. The value of the railroad's services is more than the company ever collects in freight rates or passenger fares, and the penalty of sectional isolation may be a worse thing than the burden of underwriting a railroad deficit. The weak line, then, is not necessarily to blame for its weakness nor to be considered as a socially unprofitable enterprise.

On the other hand, it is questionable whether geographical manifest destiny by itself plays a major part in putting roads in a strong or a weak position. Managing efficiency, conservative capitalization, and wise location count for more. Even lines that come late and have to take second or third choice of location may have less trouble in establishing a useful and potentially profitable plant than they have in getting reasonable treatment from those already in the field in the way of traffic connections, such as are necessary to enable them to get earnings proportionate to their service-rendering capacity. That is, the difficulties are largely due to human and removable causes in the capitalization and management of the weak roads or in the policy of their stronger rivals.

In dealing with roads of different strength, regulation may be based on the average condition of all the roads, or on what may be called the marginal carriers. A marginal carrier might be variously defined, but the idea should not be used as a cloak for culpable inefficiency. Perhaps the most significant definition would be: the road with the poorest inherent geographical and traffic conditions among the roads of some size and significance. If rates are made so that such a road can earn a fair return if soundly financed and managed with reasonable efficiency, one might say that regulation was based on the marginal road. Such a road should be a genuinely independent traffic entity and not a mere feeder which has not been merged with the main stem. Such feeders are commonly sources of profit to the main line, though not profitable by themselves. Such a road is not competitive, in any case, and may charge rates high enough to give it a fair return, except on its local traffic. Even if it is considered wise to make lower rates to develop the traffic, this is a matter quite independent of the level of rates on the main competitive systems in that region, except so far as such systems dilute their earnings somewhat by absorbing the deficits of their feeder-lines.

We may assume that there are two rates of return which can be distinguished. One is the return necessary to afford average attraction to capital in the average case in a business of fair stability. The other is the least return on which a going concern can in the long run continue to raise the added capital necessary to render adequate and efficient service. The first or average return includes either more than the bare interest on the investment or else interest on more than the bare investment—it involves an element of going value in one form or the other. The second or minimum return may not even involve full interest on all past investments, so long as present investors get adequate guaranties of return. In practice, as we shall see later, this minimum return depends much upon the state of the capitalization and the rules governing the issuing of securities. Overcapitalization or overbonding may create a condition in which further financing is impossible unless earnings are made unreasonably high. However, there is always the resort

to receivership and reorganization of the outstanding securities, even under laws so rigid as to prevent any less heroic remedy.

In the long run, the minimum return is probably not less than the average market rate on sound bonds and stocks, calculated on the amount of the investors' actual sacrifice, always assuming reasonably efficient operation. If a prospective investor sees the returns cut below a market yield on the bona fide sacrifice made by previous investors, he is likely to place his funds elsewhere. The return can be less than this for a time, and perhaps even permanently, provided the shortage does not fall on new investors but is borne by those whose capital is already committed. This, in turn, depends largely on the rules governing the terms on which securities can be issued. The minimum return is, to that extent, not a rigidly fixed thing. Its importance lies in the fact that, whatever happens to the more prosperous roads, the marginal road must earn at least this much if voluntary investment is to continue to supply the funds needed for the public service.

These two standards of return both depend in practice on quantities that must be estimated somewhat roughly, and some that can hardly be guessed at. In principle, it might seem more rational to grant the marginal roads a minimum return and let the others earn whatever excess their position makes possible. However, both the marginal road and the minimum return are hard to define concretely, and the administrative difficulties of such a plan may well be prohibitive. On the other hand, the government might regulate on a basis of the average road on the theory that every road takes its chances of success, and that all the government guarantees is fair prospects in the typical case. The large rate cases have regularly been handled on a basis of the average condition of the roads of a given section, though not without reference to the individual condition of the more important single companies. One thing which makes strongly in favor of this solution is the uncertainty of securing judicial sanction for a valuation that counts land at anything less than the present value of similar land adjoining. This gives the companies a large increase above original investment and has the incidental result that the poorer

companies can be earning considerably less than a market return on such a valuation and still cover the minimum return on the actual investors' sacrifice. Moreover, this standard corresponds to the general tacit expectation that ownership of land will carry with it the right to the "unearned increment." It may be wise to put an end to that expectation for the future by definite provision of law, but for the past it is entitled to equitable consideration. In view of the fact that the records of original cost of railroad lands are often not to be had, there is a strong case in expediency for allowing this element of value to the companies.

There are, then, two main standards of regulation—a minimum return to the marginal road, or an average return to the average road. The first calls for a bare estimate of investors' sacrifice, while the second requires a going value to be granted, either in the valuation or in the rate of return that is allowed on it. The marginal standard is of more fundamental importance, but the average standard is easier to administer. In the Railroad Act of 1920, the average standard has been adopted, but what will probably happen is that the liberality of the valuation or of the rate of return, or both, will be worked out gradually by a process of trial and error, in which the effect on the marginal road will be the decisive element.¹ In fact, its importance is so great that it will make itself effectively felt as a limit on regulation, no matter what methods and theoretical standards may be formally adopted.

From this fact of the strong and weak roads arise two further questions, both of importance at the present time. The difference may be reduced by consolidations of the strong and weak lines; or it may be reduced, so far as the private owners are concerned, by taking the whole or a part of the excess profits of the stronger roads. If consolidation is tried as a remedy for the plight of the weak lines, the attempt may be made to establish regional monopolies or to maintain competing systems of fairly equal strength. If

¹ The leading cases before the Interstate Commerce Commission have been treated on the basis of the average condition of all the roads in a given section, but the study has been sufficiently detailed to give separate attention to all the more important roads, and to rule out those whose difficulties were due to financial manipulation and administrative inefficiency. See, for example, the treatment of the Minneapolis and St. Louis and the Iowa Central in the 1911 rate case (20 T.C.C. 307, 377).

competition is maintained, there will still be some remaining differences in strength between the systems, while the question of financing the poorest constituent lines will not solve itself automatically by brigading them with richer companies. On the other hand, if regional monopolies are established, the incentive to efficiency will be seriously in danger. Competition is important, not so much for its effect on rates, but for its effect on economy and efficiency, both in the making of capital expenditures and in the operation of the property.

Under monopoly, a company would get a return on whatever investment it made, unless the investment were so obviously wasteful or the operation so clearly inefficient that a commission could prove something amounting to culpable negligence. Under competition, any gradation of efficiency, from the best to the worst, would take effect automatically on earnings. Rates being made to give a fair return on the total value of all the roads in the region, extravagant capital expenditures by one road, to the extent of one million dollars, might result in raising the rates enough to increase the revenues of the entire region, say, sixty thousand dollars. This sixty thousand dollars is divided among the various roads, while the stockholders of the road that wasted the money are thereby out of pocket the difference between the interest on the money wasted (presumably not far from sixty thousand dollars) and their share of the increase in earnings. In this same way, wastes in operation carry their penalty and unusual efficiency carries its reward. The difference is very great between this semi-automatic method of discouraging inefficiency and rewarding efficiency, and such formal tests, incentives, and penalties as would be available under complete monopoly. If monopoly were established, it would be well-nigh indispensable to keep the property divided into competitive units whose earnings should be separately traced and a share of the profits of the more prosperous units given to those most directly responsible. Yet so long as any competitive system is in force, some roads will be richer and some poorer, even though the differences may be much reduced. Thus the problem of the marginal and the average road would remain, though in a less intense form.

DIFFERENT KINDS OF VALUE INVOLVED IN REGULATION

After reviewing these main facts conditioning railroad control, we are now in a position to give some tentative answer to the question what value is and what fair value is, as these terms must be used in connection with the control of railroad rates. We can answer it, not as an abstract question, but in terms of the situations arising and the policies adopted to meet them. The method of abstract logic gets us nowhere. "Value means power in exchange. It is equal to earning power capitalized." "Fair value is the value resulting from reasonable rates. Reasonable rates are rates which yield the market rate of return on the fair value." Evidently either "fair value" or "reasonable rates" remains to be independently defined. Perhaps a more fruitful way of going at the question is to see what the quantities are that are actually involved in our rate policy, rather than to start with an abstract term and decide what it means.

The Esch-Cummins Act formulates for the first time a definite procedure for determining rates. The Commission is instructed to fix rates "so that carriers as a whole (or as a whole in each of such rate groups or territories as the Commission may from time to time designate) will, under honest, efficient, and economical management . . . earn . . . a fair return upon the aggregate value of the railway property of such carriers." A fair return is defined for the next two years as $5\frac{1}{2}$ per cent, with an added $\frac{1}{2}$ per cent, in the discretion of the Commission, "to make provision for improvements." If any carrier "receives for any year a net railway operating income in excess of 6 per centum of the value of the railway property held for and used by it in the service of transportation," one-half of such excess is to go to the Commission as a fund to be used to lend money or lease equipment to the railways.

How many kinds of value are involved in this relatively simple policy? No less than four that are worth distinguishing. There is the "value" of the railroad property of the single carrier, and there is the aggregate of such "values" for the region. Beside this, there is the commercial value of each carrier as a going concern after rates are fixed. This will be more than the previously established "value" of the railroad property in the case of strong roads, and less in the

case of weak ones. But in the case of the roads earning more than 6 per cent, the government asserts an equity in the going concern to the extent of one-half of the excess. Thus the private owners' equity is reduced to something less than the full capitalized worth of the net earnings. We have, then, the going-concern value under regulated rates, and the (smaller) owners' equity in this going-concern value. This last is the only value which could be realized at a sale of the property and is *the value* of the property in the usual commercial sense. We have, then, for every carrier its commercial worth to the private owners, the earnings-value or capitalized worth of the full net earnings, and that other sum which the law calls the "value of the railroad property" from which the whole process starts.

This last we may call the valuation. This is not the fair value of the property in the sense of the value that actually results from the most reasonable rates that can be fixed; but it is presumably an attempted estimate of fair value in some other sense. Perhaps it may be regarded as the value that *would be fair* for the property *if its rates could be fixed independently of the rates of competitors in the same district*. This is necessarily different from the actual going values that would result for the various carriers from any set of rates that could be devised. The successful road gets a going value above its valuation while the unsuccessful road is in the opposite situation: its going value is a minus quantity.

It is this valuation which we are to study in the light of the uses to which it is put. And at the very outset it appears that the problem is simplified by basing rates on the aggregate valuation for the region. For the valuation of the single carrier need not determine minutely the exact merit of the management in investing or operating its property. That would in any case be automatically taken care of in a rough way as has already been shown. Suppose, for example, the actual cost of the property (other than land) were taken as a standard. It is objected that a company has no right to earnings on extravagant outlays, while it should get a premium for unusual economy. It is not actual cost, but *what the property would have cost with such economy and efficiency as the public has a right to demand*, that furnishes the real standard. But if the cost

of all properties in the region is added together and rates based on the sum, then average economy and efficiency for the region as a whole become automatically the standard of "what the public has a right to expect," and anything greater gets its reward, anything less its penalty. The result may be exactly the same, whether the merits and demerits of each road are estimated with the minutest care,¹ or whether no attempt is made to find the just value of separate properties and the valuation is a mere record of actual cost. "It will all come out in the wash."

Under these conditions, the fair value of the property as a going concern may be said to consist of two elements. The first is the valuation of the property itself from which the whole process starts. The second is an element of going value (which may be a minus quantity) representing the inevitable difference in earning power between the road in question and the average of the district. This is going value in the true commercial sense, based on commercial principles. Going value of this sort cannot by its very nature be included in the original valuation, nor can it by the very nature of the competitive situation fail to be included in the ultimate result.

The fixing of the valuation of the property of any carrier does not, then, fix the value which the Commission is really granting to the owners. It may be more or less than the amount the going concern under regulated rates is actually worth. Valuation need not even measure value in any accurate sense. It is merely a tool in a policy from which a value will result. The second part of this study will take up in some detail the various purposes to be served by such a policy, and the kinds of valuation best adapted to serve those purposes.

CONTROL OF SECURITIES AS AFFECTING CONTROL OF RATES

This is one very important feature of the general situation and merits far more attention than it has received. A relatively high rate of return may be required if the capitalization of the companies is badly proportioned and if the issuance of new securities

¹ I am assuming that no attempt is made to equalize the net earnings of different carriers, for reasons already discussed.

is subject to hampering restrictions, where a lower rate of return might suffice if the conditions of capitalization and capital issues were more satisfactory. In particular, if the control of capitalization takes the form of preventing the issuance of stocks below par, it becomes necessary to pay on the whole capitalization whatever rate the market sets on new investments, under penalty of making it impossible to issue stocks at all. And it is impossible to go for long without issuing stocks: the result would ultimately be to wreck the credit of any company not strong enough to finance all its extensions out of earnings. Thus the par value of securities outstanding becomes *ipso facto* the valuation on which the market rate of return must be allowed, in the long run, to every company, on pain of all the evils that follow in the wake of temporary or unsound financial expedients. However, with a more elastic system of issuing securities, it may be possible to offer the market rate of return to new capital and still grant to previous investors whatever rate of return on whatever valuation the broad equities of the case may seem to demand.

This raises a very fundamental question, that of fairness as between different generations of investors, past, present, and future. That there is some connection between the treatment of future and of past investments is clearly implied in the idea that the "rate necessary to attract new capital into the business" can set a standard of fair returns for the business as a whole. As a matter of fact, there are several possible connections between past and future investments, some of them imposed by the equities of the case, and some by the more or less mechanical circumstances of corporation financing. In general, it seems natural that past investments, wisely made, should receive the same rate of return as is necessary to attract present capital. If the original investment has turned out unusually successful, so that the investors earn something more than this amount, new investors going into that business do not get the benefit. If the corporation issues new stocks, they are sold at a premium so that the new investors receive a lower return than those who originally supplied the funds for the venture which has proved so successful. In case new stocks are issued at par, the right to such stocks is granted as a valuable

privilege to the existing stockholders and may be sold by them in the market, thus bringing about much the same result by forcing the new investor to pay a premium if he is not one of the original stockholders.

This is regarded as perfectly just, since the new investors are in no way responsible for the extra profitableness of this particular enterprise. But if the same rule works both ways, investors in a more than usually unfortunate enterprise should expect that, when new capital comes in, it should come in on a more favorable basis than that of the original stockholders and should not be penalized for the ill success of an enterprise with which the new investors have so far had nothing to do. Thus, if the earnings of the company were able to pay dividends on the original stock at only one-half the market rate of return, new capital must be taken in on a basis which gives each dollar twice as much claim on earnings as a dollar of the original investment. But here a difficulty arises, since, in order to accomplish this on the present methods of corporation financing, stock would have to be issued at one-half its par value, and stock watering, the bogey of reformers, would result. Another dilemma of the same general sort occurs when the property is overcapitalized to start with and then becomes subject to laws aimed to prevent further overcapitalization. Under such circumstances, either earnings must be so high as to pay a market return on all the original water, or else no stocks can be issued except as a form of disguised assessment on the original stockholders. In such a case, a law requiring stocks to be issued at par does not permit equity or equality between the original investors and later ones, but rather enforces inequality, penalizing later investors and allowing the earlier ones the benefit of their overcapitalization. The common effect of such provisions is to stimulate the issue of bonds, which can always be sold at a discount, and thus to make bad matters worse.

These cases show clearly that even if the general policy is to allow the same rate of return on old and new investments in the railroad industry in general, it is inevitable that there should be differences in favor of the old investments on the more prosperous lines, and corresponding differences in favor of the new investors in

the less prosperous companies. And yet the recognized machinery of corporation financing provides no way of taking in common stockholders on a more favorable basis than that occupied by the original holders. As a result, either such companies must go on issuing bonds until their credit is swamped, or else they must be allowed high enough earnings to enable them to sell stock at par, with the result that every company above the poorest would be so prosperous that its stock would sell at a premium, and the most prosperous would be rich beyond the dreams of avarice. On this basis, the rates would have to be put at an absolutely extortionate level before satisfactory financing could be assured for the poorer lines. Toward such a state we have apparently been drifting in our unco-ordinated control of rates and of capitalization by different jurisdictions.

The railroads of the country at present are seriously over-bonded. Before the war the net capitalization in the hands of the public was some three-fifths bonds, and with the added debt to the federal government the proportion will apparently be about two-thirds when the roads go back to their private owners. This is too much funded debt: it leaves too narrow and uncertain a margin of income above the fixed charges. Under such conditions as these, both bonds and stocks are found to be unduly speculative and cannot command as good prices as they could if there were fewer bonds. Hence the return needed to attract capital is unnecessarily high. The trouble cannot be mended until large amounts of stock are issued, but how bring this about when stocks are unmarketable? The situation presents a perfect "vicious circle." And if stock can never be sold at less than par, there is no way out except to grant rates that will make a stock that has too much bonded debt underneath it sell for as much as if the company were conservatively bonded—rates that will bring the stock to par in spite of its unsound situation.

Even if the policy of consolidating weak and strong lines, embodied in the railroad act just passed, can be successfully carried out, this contention would lose little of its force. So long as the weak lines keep their separate corporate existence, conditions must be such that they can be soundly financed. If the strong lines

were to guarantee the bonds of the weak lines, and *refrain from issuing bonds themselves*, conditions would be much improved, but they would be better still if this were not the *only* way in which capital for the weak lines could be raised. It would make for sounder financing, even in cases of combination, if the weak lines had at least the option of issuing their own stocks. The guaranteeing of their bonds is not a full remedy when the amount of bonds issued is in itself the evil.¹ And the strong lines themselves may have none too easy sailing, in view of the fact that the fair return for an average road has been fixed by law at $5\frac{1}{2}$ per cent for the next two years, while interest rates are so high that new capital will probably cost between 6 and 7 per cent in the open market. In view of the danger of further borrowing, it would seem that either the legal fair return must be increased or stocks must be issued at a discount during the next two years, even by fairly strong roads.

But this baffling dilemma is only the logical outgrowth of our past policy of control. The unduly large proportion of bonds is in part the result of the methods used to finance the creation of huge combinations or systems of roads, but in part it is something we have brought upon ourselves, through our state governments. Their control of capitalization appears to exhibit the effects of the "single-track mind," being devoted to preventing overcapitalization before everything else. There are bound to be times when stocks do not sell at par, and those of the poorer companies are bound to be chronically in this condition. But a strict regulation of capital aiming to prevent stock watering at all costs prohibits stock from being sold at less than par, with the result that in such a situation stock cannot be sold at all, and financing has to be done by selling bonds at a discount, which is worse and tends to intensify the evil.² The present state of railroad capitalization is the logical result of such overzealous regulation.

Thus the control of capitalization seems to have produced an entirely unlooked-for effect, bringing about a state of affairs in

¹ The same thing may be said of the offer of the government in the present law to lend to the roads at 6 per cent. This is a palliative, not a remedy.

² See *Report of Railroad Securities Commission* (Washington, 1911), p. 24.

which there is real danger that unless past investments are rewarded with undue liberality, future capital cannot be obtained. As a result, we may possibly find the same radicals who recently urged the most stringent control of capitalization turning around and urging the most liberal provisions for the issuing of stocks below par, for the more extreme the radical, the more interested he commonly is in reducing the earnings of capital in public-service industries. Capital already invested is more or less at his mercy, subject to the protection of the courts, but the rate of return necessary for the attracting of new capital is utterly beyond his control. And the only way to grant a liberal rate of return on new capital while still putting a strict limit on the earnings of old investments is to let the new capital in on a more favored basis.

If, for example, it were decided that the fair value of the railway property as a whole were only twelve billion dollars, as the Plumb plan advocates contend, and if rates were fixed on this basis, new financing would be utterly impossible on a sound basis unless some method could be found for issuing stocks for less money than the present par value. Thus the proposal is not without danger, since it opens the door to unlimited squeezing of bona fide past investors, while still offering favorable terms to new capital. This must be guarded against. Nevertheless, if some such provision is not adopted, there is really not much use in trying to value the existing investment for purposes of rate regulation. Rates must be made high enough to make possible the raising of new capital on whatever relative footing the law of capitalization makes possible, and the earnings of existing investors will be whatever such rates will afford. Without some such power to adjust the basis on which new securities are issued, valuation for purposes of regulation will be a dead letter: a futile ceremony of purely academic interest and of no effect at all upon the actual earnings of the property. In the short run, regulation on such a basis can be effective, but the effect is only to pave the way to a deadlock in which capital cannot be issued and the attempt at control breaks down.

The situation urgently requires some method by which stock may be issued at a discount without false pretenses. Since the idea of issuing stock without par value seems to be too radical to find

quick and general favor, might it not be found possible to issue stocks in which the par value does not carry with it a statement that this amount of capital has been fully paid, and which carry, if necessary, the statement that this issue includes shares put out at a discount? The chief requirement from the stockholder's point of view would be that such shares should not be subject to assessment for the amount of the discount. The situation would be further helped by requiring the companies in all published statements to deduct the amount of this discount from the item of "capital stock outstanding" on the liability side of the balance sheet. This would make the nature of the situation perfectly evident, whereas at present such discounts on stocks as appear in the accounts are added to the asset side of the balance sheet, where they mean nothing at all to the uninitiated.

The present act lays down no rule for the issuance of securities, but it grants the Interstate Commerce Commission full power in the matter, and no other permission than theirs is required for the issuance of securities. This gives them a free hand to control securities in any way necessary to support, and not thwart, their policy in the control of rates. The Commission has all the cards: it only remains to play them.

CONCLUSION

To sum up: Railroads are semi-competitive industries. As a result, any scheme of rates necessarily gives the companies a going value different from the valuation on which the calculation was based. These differences cannot be wholly wiped out, though they can be lessened by consolidations and the taking of part of the profits above a given level, for example, 6 per cent. The public is not willing to grant extortionate earnings to the most successful roads in order to enable the least successful to finance themselves; therefore a way must be found by which they can finance themselves in spite of not being prosperous enough to market stocks at par. Thus some system that permits stocks to be sold below par in case of necessity is an essential part of our present scheme of rate control.

II. THE PURPOSES TO BE SERVED BY VALUATION

I. "JUSTICE"

Even from the point of view of mere expediency, one of the last things which a policy of regulation can afford to ignore is the requirement of just treatment to the various interests concerned, according to the accepted standards of justice. These standards appear to be based mainly on two sorts of tests: that of living up to the reasonable expectations which one's own acts or policy have created, and that of equality of treatment between different individuals or different classes. In the case of the railroads, there are many groups or individuals to be considered, and it may well appear that these standards of justice cannot all be satisfied for all of these groups. There is the original investor, the "innocent purchaser," and different groups of these in different enterprises, and there is the tax-paying and rate-paying public. There are questions of equality of treatment between those who have invested at different times in the same business, between investors in the different railroads, and between investors in regulated and unregulated industry. Then there is also the question of fair treatment between different generations of customers.

Who shall be considered as the original investor, or the innocent purchaser? Plenty of argument may be made for the position that the innocent purchaser should not be taken into account at all. He succeeds to whatever claim the original investor had—no more and no less. If his claim were always recognized at its full face value, no regulation of earnings would be possible because there would always be some investor who had bought at the top of the market and whose earnings could not afterward be reduced by regulation. It is plain that the innocent investor cannot be granted a vested interest of an absolute sort without depriving the public of all protection, and that the lesser interest must give way before the greater. In general, most of the innocent investors in railways have purchased since regulation became an established fact. Each purchaser buys a share in a property that is known to be subject to whatever regulation would be just to the person from whom he bought. If regulation of a sort that would be fair to

the original investor works injustice to such innocent purchasers, it would seem that it must be because of misconception on their part as to the facts of the business investment they were getting, rather than as to the liability of regulation under which they lay. Therefore it would seem that their grievance is against the people from whom they bought rather than against the government.

The chief exception to this rule is in case the government has itself given the purchasers reason to expect a more liberal policy than it ultimately sees fit to follow. And yet this consideration must not be given so much weight as to bar the government from ever changing its policy in any way unfavorable to the investor. The investor is reasonably liable to a certain amount of change in public policy, subject always to the unchanging fact of protection by the courts. The best procedure is probably to work out a plan of regulation in the light of the needs of the present situation and then see if the just expectations of innocent investors are seriously impaired by such a policy.

As for equality between regulated and unregulated industries, that is impossible in the nature of the case, and the thing to be sought is not complete equality of treatment but rather treatment that will give as nearly as possible equivalent advantages and disadvantages. The unregulated industries are necessarily more speculative than the monopolistic industries subject to regulation, and the problem is one of offering rewards in regulated industry, necessarily less speculative than rewards in the unregulated competitive field but of equal worth in the eye of the investor. The regulating authorities have considerable latitude to put their incentive in a more or less speculative form. For example, cost of reproduction as a principle of valuation introduces a speculative element which is not found in the principle of investors' sacrifice. It is coming to be thought cheaper to put the incentive in a form as little speculative as possible, since the greater certainty of reward makes up in attractiveness for a lower rate of return, and there is certainly no principle of justice which requires that rewards in regulated industries should be made as risky as those in the open competitive field if they can reasonably be made more stable.

As between different generations of customers, the principal question at issue is whether certain items should be covered out of

current income, or whether they should be added to the valuation and so become a burden on the future. The whole question of depreciation may be looked at as a question of justice as between different years of operation of the company. Replacements are heavier in some years and lighter in others, at the option of the management. This means that if there is no depreciation account, the management has power to make any given year's income larger or smaller, the difference being evened up in future years. The depreciation account is a device for giving steadiness to the annual expenses in spite of fluctuations in the amount of property that may actually be replaced. It is a device by which, if a company falls behind in replacement, it is automatically accumulating funds in order that the shortage may be made good instead of coming as an unexpected burden after the deteriorated condition of the property is discovered. Thus a depreciation account is capable of rendering an all-important service in equalizing returns between investors of any given year and those of a few years later.

It is claimed by some that depreciation accounts as now kept on railways go much farther than is necessary for this equalizing function and compel the companies to keep on hand a reserve big enough to replace the whole property new, if the whole property should by some coincidence all wear out at once, in spite of the fact that this cannot possibly occur. Thus, if the property is kept at a condition of approximately average wear, the company always has on hand a reserve equal to one-half the difference between the original cost and the scrap value of its renewable equipment.¹ This, it is claimed, is far more than would ever be needed to make good the wastage of years when the plant may be allowed to fall below a condition of average wear. The claim is therefore made that "reserves for accrued depreciation" should not be required, and that depreciation should not be deducted from the value of a plant for the purpose of regulation, since this compels the accumulation of a reserve unnecessary to the real purpose of maintaining the capital.²

¹ In a growing property the reserve would be less than this amount.

² Cf. A. A. Young, "Depreciation and Rate Control," *Quarterly Journal of Economics*, XXVIII, 630-63.

If we regard this question solely as a question of equal treatment as between different years of operation, much light may be thrown on an otherwise difficult situation. The fundamental idea is that, since wear and tear go on practically uniformly, the corresponding expense account should also go on uniformly, and therefore depreciation should be charged even when replacements are not made. If a plant were started new and in perfect working order, it would need no replacements for a considerable length of time, and its operating expenses would therefore be lower than it could permanently hope to keep them, or rather, they would fail to record at all the process of wear and tear which would be going on all the while. Granted equal producing capacity, a new plant on this basis would be worth more than a plant which had reached average wear by just the worth of these temporary savings in operating expenses. If the earning power were always equal and if there were no other disturbing elements, a new plant would always be worth more than a middle-aged plant by just this amount.

But there are several elements which work in just the reverse direction, causing the expense of a new plant to be greater and its earning power less. One of these elements is the extra outlay which a new plant requires in its first years of operation and which appears in valuation cases as the cost of "adaptation and solidification." Another is the extra cost of building up a harmonious working organization with traditions adapted to the special needs of the property and knowledge of the special conditions of traffic and operation which the property has to meet. A third is the expense of getting new business and traffic connections.

All three of these elements take effect in a shortage of net earnings in the early months or years of operation, due to heavier expenses and lighter traffic. These may be legitimately allowed for, so far as they are due to immaturity. As a result of all these facts a new plant is not worth, commonly, any more than a middle-aged one.

Under these circumstances how can justice be best secured as between earlier and later years of operation? The general principle of accounting is to charge to capital any expense, the benefit of

which is to be distributed over a number of years, so that each year will carry interest on the outlay plus its share of depreciation. The expenses of adaptation and solidification, and the shortages of income in earlier years as compared to what it later settles down to when something like maturity is reached, can both be treated under this principle and thus regarded as investments of capital. If this is done, it is equally reasonable, conversely, to regard the wear and tear of the early years in which a present outlay is avoided while storing up a burden for future years of operation, as a using up of capital. If this principle is applied in this two-sided fashion, the item of "reserves for accrued depreciation" will be largely offset—perhaps in many cases more than offset—by the corresponding items on the other side of the account.

One thing, however, needs to be guarded against. If deficits in early years are counted in the valuation, such deficits include not merely the shortage of income due to commercial immaturity, but also the excess of expenses due to operating immaturity. They thus include the cost of "adaptation and solidification." If early deficits are counted, and adaptation and solidification is also separately counted, it is counted twice. Since the item of deficits in the early operations is a somewhat difficult one to handle, and since the real cause and nature of the deficits can never be absolutely proved, wisdom counsels conservatism in allowing them to be capitalized. Possibly a reasonable rule to follow would be to provide that intangible items, including adaptation and solidification and early shortages of earnings, should be allowed if they can be shown to have occurred, but should be limited to three-fourths of the reserves for accrued depreciation when the property is in a condition of average wear. It seems fairly clear that some very extraordinary justification would be needed for allowing these items of intangible value to do more than cancel the "unnecessary" part of the depreciation reserve. The practical upshot of this would be the same as if the intangible items were not allowed but the greater part of the depreciation were simply canceled. Such a policy would in effect meet the objections already mentioned, that the depreciation item forces the companies to keep in the business a reserve which will never be used. If the intangibles

were allowed up to the full amount of average depreciation, the utmost reasonable claims of the opponents of depreciation would be met in full.

2. THE NECESSITY OF ATTRACTING CAPITAL FOR NEEDED EXTENSIONS

The second principal purpose to be served by a policy of regulation is that of attracting capital sufficient for public need as cheaply as possible in the open market. It may seem that this has nothing to do necessarily with valuation but depends primarily upon the rate of return. However, it is really a matter in which valuation, the rate of return, and the method of issuing securities are all jointly concerned. A high rate of return on a low valuation is no better than a low rate of return on a high valuation. A high rate of return on a valuation containing speculative elements may be no better than a lower rate of return on a more stable and calculable valuation. The chief disadvantage of reproduction cost as a standard of valuation is the speculative element which it introduces.

Expediency, from the point of view of the public, seems to call for a valuation that is as little speculative as possible. In terms of practical rate policy, this points in the direction of basing rates on the amount actually invested, rather than on reproduction cost, on the ground that funds can be attracted cheaper in the long run on the basis of the greater certainty of reward that would be thus afforded.

The highly speculative character of the reproduction-cost standard has never been more clearly evident than at the present time, nor has its wastefulness as an incentive to capital ever stood out more clearly. The Interstate Commerce Commission is reporting the cost of reproducing the railroads of America at the prices prevailing in 1914. The first tentative valuations, now being served on the carriers, are obsolete before they are completed, so far as this item is concerned. To bring this standard up to date would mean giving the companies the full benefit of the revolution in prices brought about by the war. But since this revolution is

something no one expected and is wholly unlikely to occur again, any gain resulting to the carriers is wholly fortuitous in the present and means little or nothing as an earnest of further gains for the future. A far smaller amount, taken in the shape of an addition to the standard rate of return, would have far more effect in attracting present capital into the business.

It may be urged that in this case, since the dollar is shrinking, the reproduction valuation does not really mean a gain to the roads, but rather that if it were not granted they would lose, because a fixed return on a fixed number of dollars means hardly more than half the purchasing power it meant before the war. At the present time the force of this objection is weakened by the fact that market rates of interest have risen sharply and are apparently still rising.¹ The result must inevitably be reflected in the rate of return allowed on railroad property.

In the long run—and this policy should be looked at in the light of long-run effects—it will probably be found undesirable or impracticable to revise the valuation downward if prices fall at some indefinite future date. Hence it seems unwise to adopt a rule that will not work both ways. Or, if it were possible to revise the valuation downward, then our present adherence to a reproduction basis would be more of a deterrent than an attraction to new capital which must invest in the business at the top of the peak of prices. There is little prospect of a further great rise of prices, and there is every prospect that at some indefinite future date the dollar will rise in value, making good some part of the loss brought about by the war.² Thus the adoption of this basis of valuation would be the worst possible policy from the point of view of assuring returns to capital now investing. A further objection lies in the fact that it throws the income account out of harmony with the value of the property, as will be seen in the following section.

So much for valuation as affecting the incentive to invest.

¹ December, 1919.

² There is little basis, apparently, for hoping that this will happen on a large scale very quickly, although some slight return toward "normal" values may take place.

3. HARMONY BETWEEN VALUATION AND THE INCOME ACCOUNT

One of the most interesting questions of policy concerns additions to property made out of earnings. Railroad advocates have contended in the past that the rates should be high enough to furnish not merely a fair return to the investor but also a certain amount for the extension of the property. On the other hand, those on the other side have objected to being required to pay a return on the property which the companies have purchased out of their earnings, claiming that this represents capital furnished by the shippers and not by the railroad investors. The question whether earnings should be made more liberal with the definite purpose of turning the extra amount back into the property is a question of policy and not of fact or logic; but whichever way it is settled, the settlement carries certain logical consequences with regard to the valuation of the property. In general, justice demands that anything which is treated as income for purposes of regulation should be a real financial gain to the company, and that anything which is not treated as income for purposes of limiting that income should not be a source of gain to the company. As the accounts are now required to be kept, the old practice of charging betterments to operating expenses is not sanctioned, and the attempt is made to see to it that income cannot be concealed by being put into betterments or extensions of property but shall appear as income for the year in which it is earned.

The result is that any earnings which are put back into the business in the shape of betterments still appear as earnings on the books and are not concealed, as might formerly be the case. In the absence of some arrangement to the contrary, they would be counted as income in deciding whether the companies had made reasonably adequate earnings in any given year. Under these conditions, it clearly costs the railroad investors something to make betterments out of earnings: when they do this they are really making an investment out of funds which are theirs to do with as they please. On the other hand, if betterments which a road makes out of earnings in any given year are not counted as income, and if, as a result, the company escapes regulation to the

extent of the income that has been thus concealed, then the investors have sacrificed nothing by putting this money into the business. Rates have been higher than they otherwise would have been, and the money has come out of the pocket of the consumer. Or, if regulation includes an allowance for betterments to be made out of the income over and above a fair return to the investor, then again the investor has made no sacrifice, and the consumers are the ones who have made the real investment. In such a case, it is clearly unfair to the public to count betterments made out of the earnings as a part of the fair value of the property. There is no absolute rule, then, as to whether betterments made out of earnings are or are not to be counted. It all depends on whether the roads gain exemption from rate control as a result of such betterments, or whether rates are the same as they would have been if the amount of the betterments had been paid to the stock-holders in cash.

Or, to look at it from another angle, if such betterments are counted as part of the valuation, then the investors gain a valuable asset in the year when those betterments were made, and this should be counted, in their income for that year; while if such betterments are not to be counted in the valuation, then they have no money value to the investors and therefore should not be counted as income in the year in which they were made. It is all a matter of harmony between the valuation and the control of income. In general, whenever the company makes an increase in its valuation in any form which has not already appeared as income on the books, a serious question of justice is raised because the investors, whose gains are supposed to be regulated, are gaining something which, coming in this form, escapes regulation.

In substance, this is exactly what the cost-of-reproduction method of valuation would do in a time of rising prices. The companies keep their property on their books at its actual cost,¹ and when the valuation goes up because of increased prices they are realizing a real gain, since they are entitled to earnings on the valuation, and yet this gain has never appeared in their income accounts.

¹ With some exceptions, which are noted below.

In general, it is not easily practicable when the property is revalued upward to count the increase in value as income for purposes of regulation.¹ As a result, if income account and valuation are to keep step with each other, it is desirable to reduce revaluations to a minimum and adopt as nearly as possible a valuation that can keep itself up to date by changes that are also reported in the income accounts. This involves among other things the accounting principles followed in drawing the line between betterments and replacements. Here the questions raised by the recent revolution in prices are real and far-reaching. The relations between the different factors can best be seen perhaps in a hypothetical case. Let us suppose equipment of an original cost of \$100, average annual replacements of 5 per cent, and a "fair return" of 6 per cent per year. And let us suppose that the cost of replacing the equipment has suddenly doubled. Let us trace the effects resulting from six possible treatments of this situation, divided into two groups. In the first group the original cost of the equipment will be charged to replacement, and the difference in cost due to increased prices will be treated as a "betterment." This corresponds to the general railroad practice in this country, except for rails and ties. In the second group replacement is charged with the present cost of duplicating the original physical property. This corresponds to the theory used in replacing rails and ties.²

1a. Here valuation is at the actual cost of the property as it stands (or original cost plus betterments, which in this case would

¹ So far as legal precedent goes, there is authority for counting appreciation, if taken up on the books, as income for purposes of taxation (*Treasury Decisions*, December 21, 1911, Vol. XXI, No. 25, pp. 57-68), and also for purposes of regulation (*Consol. Gas Co. v. City of New York*, 157 Fed. 855. *In re* gas and electric rates, Queens Borough Gas and Electric Co. 2, P.S.C. 1st District, New York, June 2, 1911). This principle is easier to follow in the case of taxation, which takes a part of the amount and generally a small part, than in the case of regulation, which aims to take the whole, as nearly as may be, of income beyond the "reasonable" level. Moreover, taxation of last year's income comes out of last year's income; but regulation on account of last year's income being too high, comes out of the incomes of the succeeding years.

² This method is employed because it is impracticable to trace the original cost of each separate rail and tie as it is replaced.

come to the same). Under this system, added capital must be found to pay the increased cost of new units bought to replace the old. The valuation starts at \$100 and slowly rises to \$200 when the whole equipment has been replaced. Since no additional plant has been installed, rates must be gradually increased to pay returns on the new capital. The raising of this capital would present difficulties. Since there would be no increase in equipment to show for it, it might not be easy to market securities to pay for it, while if it were contributed by the stockholders, it would absorb a large part of their earnings (five-sixths, if land be ignored). This would be a logical treatment of the situation, but probably inexpedient.

1b. This case is the same as the first, but the 6 per cent return is increased by an allowance for betterments, which are not to be counted in the valuation for rate-making purposes. In this case rates rise at once, the public pays for the added cost of maintaining the physical property, and the book value of the property becomes greater, while the valuation for purposes of regulation remains unchanged. This discrepancy would be an inconvenience, perhaps, but not a serious one, if the legal complications were satisfactorily arranged. Unless the companies accepted such an arrangement by contract, it might be held unconstitutional to regulate rates on a basis of a valuation less than the actual cost of the existing property. Legal difficulties aside, this is perhaps the most satisfactory solution of the difficulty, as it presents itself to the railroads of the country at the present time.

1c. In this case the valuation is on a basis of reproduction cost. The valuation, then, is doubled at once and rates are raised of accordingly. This makes it possible to pay the extra cost replacements out of earnings and still have more left than before. Ultimately, the book value of the property would rise to the cost of reproduction and the stockholders would possess property worth \$100 without added cost to themselves, \$100 having come from the public. As compared with Case 1a, the public pays higher rates during the transition period, but reaps no corresponding benefit. This will seem unfair to the public, at least in the eyes of most members of that somewhat ill-defined and heterogeneous body.

2a. In this case, the depreciation charge is increased to \$10 per year and replacement bears the full present cost of maintaining the physical property. Since it is not regarded as a "betterment" to replace a machine with an identical one that costs twice as much, the book value of the property remains unchanged, and the valuation, which in this case is assumed to be on the basis of original cost plus betterments, also remains unchanged. In this case the public pays for the maintenance of the physical property, but the stockholders reap no added income above the original six dollars per year. This is the same in effect as Case 1b and would need to be safeguarded in the same way if it is desired to prevent the companies from establishing a claim in the courts to earnings on the extra \$100 of property for which the shippers have paid.

2b. This is the same as the last case, except that valuation for regulation is on the basis of actual cost of the property as it stands. This introduces a discrepancy between the book value and the valuation for regulation, the latter gradually climbing to \$200, while the former presumably stays at \$100 in the absence of revaluations. In this case, the stockholders ultimately get six dollars per year of added income without sacrifice on their part. In fact, they would get more, since a price revolution is virtually sure to be accompanied by a very marked increase in interest rates. This is certainly true at the present time.

2c. This is the same as the previous case, but this time cost of reproduction is taken as the standard of value for purposes of regulation. The effect is similar, but even more favorable to the owners because more immediate; the stockholders get the extra income even before the public has contributed the extra cost of replacing the property. This most persons would regard as clearly unfair to the public.

Perhaps it is not within the scope of a scientific study to decide which of these policies is preferable. There can be little doubt, however, where the choice of the public would lie if the option were put clearly before them. They would choose 1b or 2a, or a combination of them—the policies under which valuation for regulation is on the basis of original cost (plus any betterments

made with stockholders' money, as distinct from the allowance contributed by the public for that purpose). Possibly they would prefer 1a as the simplest policy, in spite of the financial difficulties it would be likely to entail. They would certainly not vote for reproduction cost as applied to the present situation.

The principle of original cost, if applied to land, would deprive the companies of the unearned increment in their land values. This is a form of increase in the value of the properties which does not appear in the income account and is added to the book value by a simple revaluation. Thus it balks the attempt to keep valuation and income accounts consistent with each other.

There is, to be sure, one method of calculation which may bring the income and the property estimates into reasonable harmony, even if the unearned increment is allowed. A company may be allowed to count the unearned increment of land values in its valuation without counting the yearly increases in the value as income for the years in which they accrue, provided one readjusts one's idea of a reasonable return and considers what would be the fair money return from property where the owner is also getting an unearned increment over and above his money return. Lands which are appreciating in value are commonly bought at from thirty to fifty years' purchase, indicating that 2 or 3 per cent, beside the unearned increment, is a sufficiently high return to attract capital.¹ This method has one serious disadvantage, in that it lays increasingly heavy burdens on future generations for the benefit of the present, whereas prudence counsels that future generations will have burdens enough handed on to them, and that these should be kept down to the minimum. So far as past unearned increments are concerned, probably we have no option, but for the future it would seem best to set a date beyond which no further unearned increments should be added to the rate valuation, in which case the rate of return will have to be made liberal enough to make up for the speculative future values that have been taken away.

¹ Cf. *Steenerson v. G. and M. Ry. Co.*, 69 Minn., 353, 72 N.W. 713. Cited in R. H. Whitten's *Valuation*.

4. EFFECT ON RELOCATIONS

A further practical aspect of the counting of unearned increments is to be found in its bearing on whether it pays the company to relocate, whenever relocation would increase actual efficiency. This is one of the most interesting points in the working effects of valuation, and deserves a separate section. This problem in valuation appears in two main forms, one applicable to public utilities and the other to railroads; and while the underlying principle is the same, the cases are quite different. The reason why relocation of a plant becomes desirable in the case of a public utility is commonly because the land on which it stands has become much more valuable for other uses, whereas cheaper land could be found which would serve equally well the purposes of a public-utility plant. In the case of a railroad, this discrepancy in land values can hardly ever appear in this same way. Here relocation is an operating problem. Commonly it comes about that the growth in traffic makes it economical to build a more expensive type of line, cutting down grades, reducing curvatures, and doing other things which cost money in the capital account but which reduce operating expenses. In either case there comes a time when a certain location, which was perhaps the most efficient when it was adopted, is no longer the most efficient. When the possible gain in efficiency exceeds the cost of making a change, economy demands that the change should be made.

In unregulated business, this can be left to the self-interest of the producers. The market determines what their product is worth, and they are presumably in a position to figure better than anyone else the cheapest method of producing it and to gain more than anyone else by adopting that method. If they can find a way to turn out the same commodity cheaper, their profits will register the gain they have made. But in regulated industries the profits are controlled and the financial calculation of gain and loss in such a case is subject to the rulings of the regulating authorities in such a fashion that it is quite possible for a company to be protected against loss while failing to make a desirable relocation, or to be penalized for making one.

For example, if the public utility has a claim to earnings on the present value of the land it actually uses, regardless of other circumstances, the company can go on indefinitely using extremely valuable land near the center of a growing city and charging the consumers rates to yield a return on this land. Yet it may be that cheaper land could be had, the plant moved, the old land sold for business purposes at a high price which will more than cover the price of the new land plus the cost of moving, and the public could then get the benefit of lower rates. The difficulty here arises from an extreme application of the theory of cost of reproduction—the cost of reproducing the identical plant. On the other hand, if the theory of original cost were applied in all strictness, a company might conceivably be put in the curious position of being forced to relocate in order to get the benefit of the unearned increment on its lands, in spite of the fact that all the other land available had also risen, so that there was no real gain in productive efficiency from moving.

The original land might have cost ten thousand dollars and be worth one hundred thousand dollars now for other purposes, while other land might not be available for less than fifty thousand dollars. In this case, if the company does not move, and if the principle of original cost is strictly applied, they are entitled to earnings on only ten thousand dollars of land value, and they can gain ninety thousand dollars by selling the land for other purposes. The fifty thousand dollars which they must pay for new land does not cost them anything, paradoxical as that may seem, because they can add it to their valuation and so increase their earnings. Therefore they would gain by moving at any time when the cost of moving and the loss of plant value involved are less than ninety thousand dollars. But the real saving in the cost of land is not ninety thousand dollars, but only fifty thousand, the difference between the value of the old land and the cost of new land equally serviceable for the utility. The upshot is that, if the cost of moving represents, let us say, eighty thousand dollars, it pays the company to move, although the result is a real loss in efficiency. This highly theoretical example is introduced not so much because it represents actual cases as because it exhibits the possibilities inherent in the original-cost theory of valuation.

Somewhere between these two cases, evidently, lies the logical course. The service value of a plant is often estimated as equal to the cost of the cheapest available plant capable of rendering the same service, or an equivalent. On this basis, the land would be valued at fifty thousand dollars in the case just discussed, and if this were done, the company would find it profitable to relocate in case that meant a real increase in productive efficiency, and not otherwise. The company would get an unearned increment, but not the full increase in the price of its land. The gain would be limited, being the excess in the present cost of the cheapest available substitute above the original cost of the land they are using. There is no need to consider the opposite case in which the company would suffer a loss, since the movement of real estate values is so universally upward in such cases.

In the case of railroad relocation the principle is the same, but the case is so much more complex that it would be practically impossible to apply the standard that has been suggested for public utilities. The real worth in service of a section of railroad line may be estimated in this fashion: throw it in the scrap-heap and build the best line possible to handle the traffic under present conditions. Estimate the total cost, including operating expenses and interest, of handling the traffic on the new line. Subtract the operating expenses of handling the same traffic on the old line,¹ and the difference will be the annual service value of the old line. Capitalized at a fair rate of interest, it would furnish the service value of the old line as a piece of operating property. This method of valuation follows the principle used in the public-utility example, namely, that the value of any productive equipment is the cost of a substitute that will render equivalent service, only in this case the calculation is not so simple, and the principle appears in a changed form.²

¹ Depreciation as an operating expense in this case raises interesting questions, too complex to be gone into here.

² In this case the service rendered by one fixed plant is different from that rendered by the other, and an allowance has to be made for this difference. This method of valuing property does not involve reasoning in a circle, since the rates are not in question. We may assume rates adequate to pay a fair return on the amount needed to instal a new plant that will render the desired service.

Now it is obviously out of the question that the fair value of railroad lines and equipment should be determined by any such method as this. This would put upon the valuation authorities the burden of knowing not merely the cost of the existing plant but also the cost, capacity, and expenses of operation of all conceivable substitutes. Since the burden of accurate valuation is already almost prohibitive without adding any such requirement of prophetic omniscience, what are the practicable courses? The principal question of policy bearing on such a case in the actual practice of valuation is whether or not there should be any allowance for abandoned property. The basic rule is that abandoned property is no longer used and useful for the public service and therefore should not be counted, but here a practical difficulty arises. Whenever property has reached the stage where it ought to be abandoned in the interests of efficiency, it is no longer useful for the public service, even though it has not been abandoned; and yet it is impracticable for valuation authorities to undertake in all cases to say when that condition has been reached and to write off the value of such property from the books. The natural result is that property which has no service value may be kept in the valuations so long as it is used. The company loses the worth of the property, not when the property loses its worth, but when they acknowledge that loss by abandoning it. Under such conditions there is a penalty on relocation. The act of abandoning property which has passed the dead line costs nothing from the point of view of productive efficiency, but it costs the company whatever earnings it can collect on that amount of valuation. As a result, it is urged that the efficient development of a plant would be promoted by allowing the company to carry abandoned property on its books in such cases wherever the ultimate need of abandonment could not be foreseen and provided for in depreciation accounts.¹

It is obvious that the piling up of abandoned property on the books cannot be allowed to go on forever and that all that is

¹ This argument in favor of an allowance for abandoned property was suggested by Mr. Sumner H. Slichter, though the present writer assumes responsibility for the form in which it is here put and the conclusions drawn from it.

reasonably called for is to give the company a second chance to make up depreciation which it failed to make up during the original useful life of the property. As a result, abandoned property should be worked off by annual allowances within a reasonable period of time. The argument in favor of including abandoned property in such cases is not that it correctly states the investment in property at present used and useful, but rather that when a state of affairs is discovered which involves an overstatement of the value of the property, due to causes that are unavoidable so long as human beings are not omniscient, this overstatement is allowed to stand for the time being in order to avoid penalizing the company for the mere recognition and remedying of a state of affairs which has actually come to pass.

5. INCENTIVE TO EFFICIENCY

The chief incentive to efficiency that appears as a part of the valuation itself is a negative one—a return is not guaranteed on expenditures that are made unwisely, extravagantly, or inefficiently. To be consistent, valuation boards should grant a premium on expenditures made with more than usual economy and efficiency. Strictly speaking, in place of the actual cost of the property, there should stand the amount such property might reasonably have cost. Every valuation would then be hypothetical. In practice demonstrable shortcomings can be penalized, while special merit generally finds its own reward regardless of the valuation authorities. In fact, in a semi-competitive industry like the railroads, these differences will take care of themselves if rates are fixed on the basis of the actual cost of all properties. This amounts to taking average efficiency as standard. Departures from the average will take effect automatically on the profitability of each separate property, along with every other circumstance that has any bearing on the profitability of a common carrier. As long as railroads are independent and competing with each other; as long even as there are separate regional systems of railroads serving industrial constituencies, which must if possible be kept in business in competition with each other, there will always be a differential gain to the more favored lines. The profits of any company will not

depend solely on its own valuation, because rates will necessarily be fixed with reference either to the average returns secured by all the roads or with reference to the return secured by the marginal carriers. In either case any single road would have a chance to increase its returns by increasing its efficiency, even though this reduces its own individual valuation. Even if it is itself an average road or a marginal road, any change of fortune or efficiency may cause it to rise above that level or to sink below it. Thus it is not like a complete monopoly, which may lose all the benefit of increased efficiency in case its earnings are strictly regulated to a given percentage on a given valuation, because in that case any improvement in the management might be fully neutralized by lower rates.

The question whether these differences are just need hardly be debated. They arise partly from the merits or demerits of the management and partly from sheer manifest destiny, and there is no easy way of determining which plays the greater part in a given case. It may be possible to introduce tests of operating efficiency by which some light could be thrown on this question, but it is difficult to conceive of any such test which could be taken as final. Even if a thoroughly reliable test could be formulated, there is no very good way of using it as a basis of rate-making for the different roads, since that would involve different rates for competitive services. The only use that could be made of such tests would be in case some plan were put in force for profit-sharing between the different roads, or between the roads and the government. For purposes of stimulating efficient management, profits due to superior efficiency should be largely exempted from any such plan, if they could be distinguished, while profits due to location alone might just as well be treated as common property, so far as the effect on efficient operation is concerned. But there is also wisdom and unwisdom in the choice of a location for main lines and for future extensions, and no possible "merit factor" can accurately measure or standardize this element in efficiency. Thus any plan that takes all the profits above any given amount, even if that amount is determined by a calculation of merit, is a mistake from the point of view of incentive to efficiency. A part of the

profits is all it pays the state to take by way of asserting the common interest in the producers' surplus.

In calculating the amount of earnings to be exempted from profit-sharing, an allowance for merit or demerit could be included either by increasing or decreasing the capital sum on which the amount of exempted earnings is calculated, or by simply adding to or subtracting from the annual earnings arrived at by figuring a fair return on actual investors' sacrifice. Of the two methods, it would seem far better to make the allowance in the earnings rather than in the capital sum on which they are calculated. For any such capital sum looks like a valuation, and a valuation is a semi-permanent thing and tends to establish a vested interest, while the efficiency of management is too evanescent to deserve recording in a catalogue of fixed assets.

Indeed, some doubt whether it is necessary to efficiency to grant any special profits to investors, if only a reliable basis can be found for giving differential incentives to the managing officers, since it is on their efforts that results depend, not on those of the stockholders. However, this is true only in a very limited sense. It does not come amiss if the stockholders' income depends to some extent on seeing to it that efficient managing officers are chosen. Moreover, if all differential profits to stockholders were abolished or pooled, it would amount to confiscation of the differential values of the better properties, and a serious question of constitutionality might be raised. It might be held that compulsory profit-sharing is not a "due process" by which to take earnings, "due process" being limited to (1) non-confiscatory regulation, and (2) taxation. In that case, those who wish to see a redistribution of the railroads' unearned increment would be forced to fall back upon the taxing power, unless some profit-sharing plan were voluntarily accepted.

As for the device of efficiency premiums to the managing officers, there is no reason why it should not be used in any case if a satisfactory test of efficiency can be worked out. Until it has demonstrated its possibilities, it would not be wise to give up the cruder form of differential incentive which we have at present. The actual differences in earnings between different roads are not

fair measures of the relative efficiencies of the managements: that may be taken for granted at the start. But so long as they are not tampered with, any increase in efficiency brings an increase in profits to any individual road. If the differences and unearned producers' surpluses are too great, the simplest thing is to divide them between the railways and the public. For example, the government might take one-half the profits above a return of 6 per cent, and underwrite one-half (never the whole) of deficits below 4 per cent where such deficits are not due to mismanagement or demonstrable inefficiency. This would leave the roads the full benefit of their own exertions throughout the low-medium range of earnings, where such an incentive can do the most good. The question whether such a profit-sharing scheme should be followed, with or without a partial underwriting of deficits, depends largely on whether the roads are left independent as they now are, or whether they are combined into larger systems with a view to reducing the differences in earning power. To just the extent that the differences in earning power might be eliminated, such a profit-sharing scheme would automatically have less and less effect.

6. LAND GRANTS

Any possible treatment of land grants is unjust, and the question is one of reducing the injustice to a minimum. When the grants were made, there was no idea that the question would ever arise whether their value should be counted for purposes of limiting the earnings of the companies, and at what amount the value should be set. If the present situation had been anticipated, it would have been clearly wise and proper for the government to stipulate that land used for railroad purposes, when granted free by the government, should not be counted as part of the railway's investment for purposes of rate-making, or at least should be counted at some fixed maximum valuation per acre. Such a provision would have made very little difference in the attractiveness of the proposition offered to private enterprise by the government grants. The greater part of the area granted would still have been held by the railroads in fee simple to be sold by them at

whatever price they could get and whenever they chose. Certainly there is no other way of treating the land in the alternate sections off the right of way, from which the railroads could never realize any benefit unless they sold it. But the grant of land for the right of way itself did give a substantial benefit entirely apart from being counted as the carriers' own investment, for it enabled them to build the roads with less capital and incurring less fixed charges at a time when capital for such enterprises was no less scarce than capital for railroad expansion seems to be at the present time. Thus the grant of free land for a right of way was a valuable consideration, even if it had been merely to be held in trust for the public and not regarded as a railroad investment at all. Since no such stipulation was made, however, the question remains open, with the presumption in favor of the land being treated as the full property of the carriers.

Among the circumstances of the case, however, one highly pertinent fact is that the government has reserved valuable privileges in exchange for the land grants. Uncle Sam is the one big shipper who openly gets discriminatory rates, and the amount of these discriminatory rates on land-grant railroads during the recent war was very considerable. What bearing, if any, has this on the justice of valuing these lands? In order to show this in clear relief, let us suppose as an extreme case that the favors granted to the government in low rates are substantially equal to a fair annual return on the value of the land in question. From one point of view, it might seem that because the railroads are paying the full value of the land in the form of lower freight rates, the land should be justly regarded as their own. But a second consideration would show that the case is really just the reverse. I do not pay somebody else a continuing rental on property if the property is mine in full. Furthermore, if I count the value of the property for which I am giving someone else a valuable consideration every year, and if I collect rates from other customers high enough to give me a fair return over and above the valuable consideration which I am giving for the use of this property, then the consideration paid for the use of this property is not costing me anything and I get full net return on the property, although I am recognizing by the

annual allowances I make that I am not full owner of it. I am charging the public higher rates than I would have been able to charge if I had owned the land outright, having bought it with my own money. In fact, the public is paying a return twice, for it not only pays its share of freight rates calculated to yield the company a return on the land, but it pays enough more to make up for the concessions granted to the government. Surely, it is a strange result of a land grant made to aid the development of transportation, if the rates become higher than would be allowed if the railroad company had furnished its own land. It would seem that the public has an equity in the land grants, and that the equity of the company for valuation purposes should be reduced by at least the capitalized value of the reductions in rates which the government receives. Otherwise, private shippers actually bear an increased burden as a result of having, via the government, granted their land to the railroad.

7. HARMONY BETWEEN THE BASES USED BY COMMISSIONS AND BY COURTS

It is a matter of convenience, but not of necessity, that commissions should use the same basis in calculating a reasonable schedule of rates which courts use in reviewing their findings. To be sure, the award of a commission should not be rejected by the court merely because the commission uses a smaller valuation than the court thinks is fair, provided the return allowed is sufficiently liberal on that valuation. The question before the court is whether the actual returns allowed are greater or less than what the court would say is a fair return on a fair valuation. The commission's method of arriving at these returns should not be allowed to decide the case. However, the lack of uniformity may make unnecessary trouble.

CONCLUSION

This pragmatic study of valuation gives little support to cost of reproduction as a standard of valuation in any form, and none to the form in actual use. Only for one purpose—the proper handling of relocations—is cost of reproduction usefully pertinent at all, and then it is the cost of reproducing a substitute plant, not

the identical one that now exists. Even this matter can be handled without using cost of reproduction as a standard in valuing the property as a whole, if consideration is given to it in deciding when particular parts of the property have depreciated to zero. The weight of evidence runs all in favor of some standard based on actual cost, the exact form depending on the methods used for calculating replacements and for dealing with betterments made from earnings. The indications are that depreciation should be deducted, but that adaptation and solidification and shortages of earnings due to the developmental stage of the business would largely cancel this deduction. It should be possible in some cases to keep abandoned property on the books for a limited time, amortizing it during this period.

The present revolution in prices furnishes a strong argument for allowing rates high enough to maintain the physical property at the present high prices without giving the owners a corresponding increase in valuation. As for land, the study points in the direction of counting it at the present value of similar land, but stipulating that for the future there should be no unearned increment allowed. This would probably call (automatically) for a somewhat more liberal rate of return than if unearned increments were permitted for the future without limit. And finally, it cannot be too strongly emphasized that if we are to avoid the necessity of allowing either an unduly high valuation or an unduly high rate of return, it will be necessary to provide some machinery by which roads that are in financial difficulties, temporary or chronic, can issue stocks at less than par, with full publicity and preferably with a corresponding reduction of the "capital stock" item in the balance sheet.

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